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ABSTRACT

To study mother-child interaction patterns in culturally disadvantaged and culturally advantaged families, verbal and nonverbal communications were observed, recorded, and analyzed both independently and collectively. Subjects were 10 Head Start children, 10 culturally advantaged children, and the mothers of both groups. Communications were assessed according to the interpersonal dimensions of status, affection, and involvement. In general, Head Start mothers provided less social reinforcement for their children's activities, and many of their involvements were highly authoritative interventions. Head Start children took and solicited leadership more often, and they displayed both more hostility and more warmth than the advantaged group. Thus, Head Start mother-child dyads had fewer affection-based interactions and more status-based interactions. There were equal amounts of conversational interchange in the two groups. Significant differences between the two samples were found in the frequencies with which certain communication patterns occurred, and the contexts in which they occurred. However, when the same patterns did occur, the consequences were likely to be the same for both population samples. (DR)

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A STUDY OF COMMUNICATION PATTERNS IN DISADVANTAGED CHILDREN

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INTRODUCTION

The educational disadvantage of the culturally deprived child is well recognized. The evidence is that by the time such children reach school age they display limited exposure to learning experiences, deficit in their store of factual knowledge and physical skills, and restricted ability to use symbols. It is, therefore, important to explore whether these differences are associated with the means of communication to which these children respond readily, and/or the cognitive structure of the communications in which they habitually participate.

In the preschool years the interaction between mother and child normally mediates the largest part of his environmental experiences. Therefore, knowledge of mother-child interaction patterns, the means by which communications are exchanged, and the kinds of communication that take place, are basic to an understanding of the learning potential with which the child is equipped. The elements of this interchange need to be understood in much greater depth and detail to be able to design the most effective situations for the child's intellectual and social growth.

Investigations into the effects of cultural deprivation on the child's response to the educational process have utilized several different approaches. Demonstration of different cognitive styles and learning potential in the disadvantaged child has logically led to consideration of the environmental factors which shape the child's learning patterns in general and his acquisition and use of language systems in particular. More intensive exploration of language systems and the development of symbolic thinking has necessarily involved attention to the learning experiences to which the child has been exposed. It has been recognized in this connection that in the early years the home is the essential source of the child's learning, and the mother the primary agent. Finally, one cannot study the mother's complex role in the intellectual and social growth of her child without some knowledge of the culturally determined values and attitudes which have influenced her communication and interaction with the child.

Deutsch (1964) discussed the cognitive style of the deprived child as differing from the middle class in both its form and its content. Content deprivation refers to the child's materially limited exposure to objects, information and experiences. Form deprivation is reflected by differences in the operations by which experiences are perceived and responded to, the attitudes and expectations about learning, the ability to sustain attention, satisfy curiosity, etc., and the systems of reinforcement which have proven to be effective. Deutsch spoke of the importance of the adult-child dynamic in establishing the basis for later learning and proposed, as an example, that in lower class homes question-asking is not encouraged, and that language activity in general is less complex and less practised. He cited the view of Basil Bernstein, British sociologist, that the ways in which language is used are related to social class, and that lower class language is more restricted, concrete, and immediate while middle class language is elaborated and emphasizes the relating of concepts.

Thus it seems that one must examine both the amount and kind of verbal communication which is utilized. Riessman (1964), in response to the question "Are the deprived non-verbal?" interpreted the evidence as indicating that they are not, but rather that they use language in different ways. He referred to the opinion of Irving Taylor that they are less "word-bound" than middle class members and that they tend to permit language to interact more with non-verbal means of communication.

Bernstein (1964) defined restricted language codes as being specific and concrete, and as reflecting relationships which are based on authority, conformity and obedience. He characterized the behavior involved as being status-oriented behaviors. While middle and upper classes also utilize restricted codes and status-oriented behavior, they use, in addition, the elaborated person-oriented language which refers to broader and more abstract relationships, feelings, and intent. Upper class families are seen as having both forms of language and relationships equally at their disposal while lower class families and family members operate only with restricted, status-oriented codes and relationships.

Hess and Shipman(1965) applied Bernstein's concepts to two types of family control: control oriented toward status and ascribed role norms, and control oriented toward persons. Using observational records of preschool-aged children and their mothers from four social classes they demonstrated that person-oriented statements on the part of mothers increased with higher social class and that status-oriented statements decreased. They characterized the teaching techniques of the lower class mothers as giving instruction or help in completing the immediate task without generalized application, and those of the higher social classes as being directed more toward the child's learning to decide between alternatives. They also commented that mothers of the four status groups differed relatively little, on the average, in the affective elements of their interaction with their children. Walters, Connor, and Zunich (1964), who also used observation records of 3-1/2 to 5-year-old lower class children in interaction with their mothers, compared their results with others reported for middle and upper class subjects. They demonstrated that there was much less interaction observed among lower class mothers and children than there was among middle and upper class subjects, and that the latter therefore exhibited more of all forms of directing, helping, structuring, and teaching behaviors.

Bee, Nyman, Pytkowicz, Sarason, and Van Egeren (1968) also employed observation of mother-child interaction in their comparison of cognitive and motivational variables in lower and middle class preschool children. They concluded that middle and lower class children did not differ from one another as markedly in the observed situations, as did their mothers. The most outstanding differences were that while both groups of mothers suggested behaviors to their children, the suggestions made by lower class mothers were more specific, and that lower class mothers provided their children with more negative feedback and less positive feedback. They also noted that middle class mothers made less control-statements.

Klaus and Gray (1968), describing their rationale for the Early Training Project, viewed the patterns of adult-child interaction as the source of handicap in the deprived home, and saw the deprivation as being reflected in the child's perception, concept formation, and language. They pointed out that the

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middle class parent is more likely to have the training, the time, and the energy to interact with the child in developing the necessary attitudes.

Kohn (1964) approached the problem from the point of view that the quality of parent-child relationships was of more central concern than the specific child-rearing or teaching practices. He reviewed the important studies of the last 20 years and emphasized their agreement on the fact that the values of working class parents stress conformity to external prescriptions (obedience, neatness, cleanness, etc.) with emphasis on the child's behaving properly, while middle class values stress self-direction by the child, and the importance of the child's motives, feelings, happiness and well-being. Working-class parents respond to the consequences of the child's acts and emphasize the parents' obligation to impose constraints; middle class parents respond to the intent of the child's act and feel a greater obligation to be supportive of their children.

DESCRIPTION OF PROJECT

Many investigators have made it clear that behavioral observations offer a sounder basis for effective research in parent-child interaction than interview or questionnaire can supply. Therefore, the present study was designed to apply refined observational methods to the study of mother-child interaction in the preschool years in culturally advantaged and culturally disadvantaged families.

The essential principle of the observational approach which was selected for use was that recurrent groupings of temporally related behavioral units could be identified, that they were recorded in forms available for computer processing, and that systematic differences in the frequency, duration, and/or sequential ordering of these patterns could be demonstrated by means of contingency analysis techniques.

The objectives of the study were to record both verbal and nonverbal communications, and to subject them to detailed analysis, both independently and together, focusing special attention on the reciprocal aspects of these interactions. The goal was to demonstrate that the approach could delineate characteristic styles of communication in individual subject-pairs, and to explore whether there were consistent similarities and differences in preferred modes of communication between members of culturally advantaged and culturally disadvantaged groups.

In terms of the issues raised by other investigators, the study was designed to explore the amount and kind of interaction displayed, with particular reference to both the form and the quality of the communications. The specific goal was to examine both what was said and/or done and how it was said or done.

Method

Behavior codes had been empirically derived and applied in pilot studies (Kogan and Wimberger, 1966). They furnish as complete and reliable a record as possible of the occurrence of objectively identifiable nonverbal behavior units. The coding system is provided in Appendix A.

The record of social interaction consists of the combined verbal and nonverbal communications. While effective analysis of observational data must be based on objectively defined, accurately recorded, empirical behaviors, it must also allow for extracting the generalized attributes which constitute the recurrent and systematic patterns by which particular dyad relationships are defined. The system developed in the present research permits statements of generalized communication patterns, at the same time preserving identification of time-unit simultaneous and sequential patterns, as well as notation of the specific behaviors by which the generalized attitudes or qualities were expressed.

The conceptual framework selected is in accord with the thinking of a number of investigators who have viewed mother-child interaction as being adequately and parsimoniously represented by two main dimensions having the general qualities of dominance-submission and hostility-warmth. In the scheme used here a complete rating included assignment of values on three parameters,

relative status, affection, and involvement (Wimberger and Kogan, 1968). Each member of the dyad is rated for each parameter for each four-second interval.

Status. This parameter was derived indirectly from the dimensions established by the Kaiser Foundation group in their early analyses of interpersonal behavior (Freedman, Leary, Ossorio, and Coffey, 1951). Related concepts have been used by other investigators, e. g., Borgatta (1955) "individual assertiveness", Roe and Siegelman (1963) the "demanding-casual" continuum, Schaefer (1959) "control-autonomy", Chance (1955) "active-passive" behaviors, Terrill and Terrill (1965) "status". We have arbitrarily chosen to follow Terrill and Terrill's use of the term status to refer to the relative position one participant maintains with reference to the other. High status ratings are accorded to behaviors which exert control, demonstrate expertise or authority, or exhibit assertiveness. Specifically, behaviors which are mainly controlling include ordering, prohibiting, giving permission, restraining, giving or taking away. Assertiveness may include insisting, demanding, contradicting, snatching, screaming, etc. Expertise may be expressed in teaching, explaining, suggesting, or praising. Low status is achieved by accepting or soliciting control, by being deferential and unassertive, and by acknowledging another's expertise and/or one's own lack of knowledge.

Both status and affection (to be defined below) are rated on seven point scales ranging from 1 to 7. Behaviors which neither enhance the relative status of one person nor lower the relative position of the other are accorded neutral ratings at a scale value of 4. Scale values of 5, 6 and 7 represent increasing degrees of high status while values of 3, 2, and 1 indicate increasing degrees of low status. Moderate values (3 and 5) generally cover communications in which the content is unrelated to status but which have implicit relevance for the relative status-roles of the participants. More extreme values, (6, 7, 1, and 2) represent behaviors in which either the content (verbal or nonverbal) or the quality of the message, or both, have explicit bearing on relative status. Scale values of 0 are reserved for communications which convey ambiguous messages, simultaneously expressing high and low status (e. g., assertive demand for help, ordering other to make decision for the speaker).

Affection. The second parameter deals with giving and seeking or receiving warmth, love, friendliness, acceptance, comfort, etc. The behaviors rated on this scale have a common quality of expressing positive or negative affect. Some behaviors appear to be direct expressions of affection while others are indirect manifestations. The same principles of explicit content and implicit quality as were discussed with reference to the status scale are applicable to the affection ratings. The same format of a 7 point scale is used. Behaviors which imply simultaneous incongruous messages are rated as ambiguous with a scale value of 0.

Involvement. This scale is intended to assess the extent to which one person's attention is directed toward or focused on the other. Even though two persons are present in the same room, at times they are actively responding to each other, at other times they are engaged in mutual activity or passive observation of the other, and at times they are engrossed in individual activity without paying manifest attention to the other. Involvement is rated on a four-point scale - 0 meaning attention focused elsewhere and receiving no sensory stimulation from (neither seeing nor hearing) the other person, 1 meaning passive and 2 designating active involvement, and 3 being reserved for unusual instances of extreme involvement.

Status-Affection-Involvement ratings (S-A-I ratings) make it possible to assess the generalized qualities of a series of communications and to extract the systematically repetitive patterns and sequences which characterize both mother-child interaction in general and the communication styles of particular dyads. Translation of data into such generalized dimensions and their sub-categories necessarily masks information about the particular behaviors which constituted the original interactions. Notation of the Interactive Function in this scheme was designed to preserve some record of the specific means by which subjects implemented their communication styles during each recorded time-interval. Thirty-seven functional categories have been identified, empirically derived from the pilot studies. They cover major categories of asking questions, reporting or describing events or feelings, making evaluative comments, echoing, giving information, directing, agreeing, disagreeing, soliciting attention and giving permission, as well as nonverbal and expressive vocalizations, and nonverbal symbolic gestures. The complete schedule of Interactive Functions is given in Appendix B.

Subjects

Ten mother-child pairs were selected who were either (a) enrolled in the King County Head Start program, (b) enrolled in the Seattle Pre-Kindergarten (Head Start) program, or (c) enrolled in the Neighborhood House-Family Life playgroup at Yesler Municipal Housing project. All were Caucasian women (although one was married to a Negro). According to the Hollingshead Two-Factor Index of Social Position, six families fell into Social Class category IV, and four into Class V.

Comparison subjects consisted of 10 mother-child pairs who lived in the general area of the University and/or whose husbands were associated with the University in some way, who had responded to the request that volunteer subjects were needed for training purposes. Five families were classified as belonging to Social Class I and five to Social Class II. In each group there were 5 boys and 5 girls, 4 or 5 years of age.

Procedure

Each mother-child pair was observed in a room equipped with a one-way mirror and microphone. During these observation sessions the subjects' vocalizations were recorded on one channel of a stereophonic tape recorder. Simultaneously, the observer watching the interaction from the next room spoke coded verbal symbols, representing the ongoing nonverbal behavior elements, into the second channel of the tape recorder. Superimposed time signals, every four seconds, served as the time-unit markers for later analysis. Each mother-child pair was observed for 42 minutes, yielding 630 recorded four-second intervals on each of two occasions, or 1260 time-intervals per pair of subjects.

Each of the two observation sessions had four sections, referred to as settings 1, 2, 3, and 4. In setting one the subjects were ushered into the playroom which was furnished only with a table and two chairs. A felt tic-tac-toe board was lying on the table but no reference was made to it. They were asked to seat themselves while the examiner prepared the toys. In settings 2 and 3, two different selections of toys were provided, each for 12 minutes, and the child was told that he might play with anything he liked and see which ones he

liked best. In setting 4, a PLAYSKOOL pegboard was the only toy presented, and subjects were asked to "make something together".

Data were transcribed so that verbal and nonverbal behaviors for each time-interval were in parallel columns. The interpersonal behavior ratings were made while listening to the taped verbalization and referring at the same time to the written transcription of the verbal and nonverbal columns. Ratings for one-quarter of this material were made independently by two raters. Rater agreement averaged 84, 85, and 96 percent on the three scales (status, affection, involvement) for three judges in the three possible paired combinations. Two raters were undergraduate college students who were being trained as observers; one rater was the principal investigator.

FINDINGS

A. Interpersonal Behavior Ratings

The following data analyses are based on the S-A-I ratings of each dyad's total behavior sample (i.e., all four settings on two occasions) both because the larger sample furnishes the most reliable data, and because this large a reservoir of data is required in the search for sequential pattern relationships. An earlier examination of the comparability of the separate settings in a sample population had indicated that there was no orderly distinction between them but that there was random variation in the frequency of occurrence of the rarer S-A-I combinations. Differences in the frequencies of some rating patterns on the two occasions were also occasionally beyond the chance probability range for individual subjects, but there were no systematic differences directly attributable to occasions as a specific variable.

Although our ultimate concern is with the combination of rating patterns displayed by the two participants either at the same time or in immediate sequence, it was first necessary to examine the single elements making up the patterns.

Frequency tables will be found in Appendix C, giving the number of intervals (out of 1,260) in which mothers' and children's status, affection and involvement ratings were at each of the scale values. Since the subject samples used were small and were in no sense expected to be representative samples, group comparisons were made in the most conservative way. The statistic chosen was the Mann-Whitney U test since it deals only with the relative magnitude of the measures in the two groups and requires no assumptions about their stability in repeated sampling or normalcy of their distribution.

1. Mothers

a) Single ratings

Head Start mothers displayed moderately high status ratings (scale value 5), significantly less often than Comparison mothers, but the two groups did not differ in their ratings on any other part of the scale.

Affection ratings for the two groups of mothers did not differ in any significant way.

Head Start mothers were actively involved with their children less of the time than were Comparison mothers, and were passively involved more of the time. They did not differ, as a group, in the amount of time they displayed 0 involvement, or were "turned off".

b) Patterns of rating combinations

A status-affection rating combination is said to be significant when the actual occurrenee of that combination exceeds its estimated probability (based on the rates of occurrence of each element of the combination singly) at the 1% level of confidence. Patterns for a group of subjects are derived by summing the Chi values for the individuals and interpeting the resulting z in terms of the appropriate degrees of freedom corresponding to the number of subjects.

All status-affection patterns which were significant for the group of Comparison mothers also occurred for the group of Head Start mothers. However, Head Start mothers displayed a greater variety of unfriendly control patterns (high status with negative affect) than the Comparison mothers did. Although there was a significant difference in the total amounts of status 5 ratings exhibited by the two groups of mothers, there was no difference in the affective quality associated with that moderate control; Comparison mothers did not have a greater number of Status 5-Affect 5, Status 5-Affect 4, nor Status 5-Affect 3 combinations. On the other hand, although Head Start mothers had no greater total numbers of Status 6 and 7 ratings than Comparison mothers had, nor any greater number of negative affect ratings, they did exhibit the simultaneous combination of high status with hostility significantly more often than the Comparison mothers did ($p < .05$).

Although there was no difference in the total numbers of neutral status or neutral affect ratings given the mothers in either group, the fact that Head Start mothers had more intervals of passive involvement and less intervals of active involvement than Comparison mothers was reflected in their having significantly fewer S-A-I ratings in the 442 category ($U = 9.5$, $p < .002$) and a tendency toward a greater number of 441 ratings ($U = 25$, $p < .10$).

2. Children

a) Single ratings

Head Start children differed from the Comparison children in both status and affection ratings in the same way; on both scales they had fewer neutral ratings (status scale value 4, $p < .05$; affection scale value 4, $p < .02$). Instead, on the status scale they tended to display more of both low status ($p < .10$) and extremes of high status ($p < .10$). With respect to affection ratings they obtained more negative affection ratings ($p < .02$), but they also tended to have a greater number of behaviors classified as moderately warm ($p < .10$).

Head Start children were passively involved with their mothers in fewer time-intervals than the Comparison children were ($p < .02$). This contrast is somewhat dramatic since their mothers had greater amounts of passive involvement than Comparison mothers. The total range of passive involvement ratings exhibited by Comparison mothers and their children was essentially overlapping; one child was below the range of the ten mothers, and one mother was above the range of the ten children. However, when the range of passive involvement ratings for Head Start subjects was examined, nine of the ten children had fewer intervals of passive involvement than any mother in the group, so that there was only one overlapping score. Hence, Head Start mothers had distinctively large amounts of passive interaction while their children had distinctively small amounts of passive interaction. The contexts or sequences in which these behaviors occurred will be examined in greater detail in the section on mother-and-child patterns.

b) Patterns of rating combinations

Group patterns for the children corresponded in many respects, but the following differences were noted. Comparison children as a group displayed high control-positive affection patterns significantly often (S6 :A5, and S6 :A6), but these patterns did not occur for the Head Start group. Head Start

children as a group displayed high control in combination with extremely negative affect, patterns which did not appear in the Comparison group. Comparison children also had a low status: friendly pattern which did not appear in the Head Start group. Instead a pattern of low status: neutral affect appeared in 4 of the Head Start dyads but not at all in Comparison pairs.

It has already been pointed out that Head Start children displayed greater amounts of negative affect. Furthermore, this hostility occurred mainly in conjunction with extremes of high status. Thus Head Start children had significantly greater numbers of high status-negative affect ratings ($p < .002$) but the expression of hostility in combination with other levels of relative status was no different for the two groups (see Table 5).

3. Mother-and-Child patterns

The next logical step of analysis dealt with the question "in what context of child behavior did mothers exhibit their characteristic behaviors" and vice versa.

a) Contingencies between mother's status and child's status.

There was a great deal of similarity in the group patterns exhibited by the two subject samples, with an overall tendency for status relationships to be reciprocal, i.e., for mother's low status to be associated with child's high status and child's low status with mother's high status. Almost all patterns which appeared in the Comparison group were also found in the Head Start group. However, several additional patterns were found among the latter subjects.

Simultaneously competitive high status patterns (MS 6 : CS 6, MS 7: CS 6, MS 7: CS 7) constituted a cluster of group patterns for Head Start dyads, occurring in 8 of the 10 pairs, but were found in only one Comparison pair. Head Start pairs also displayed simultaneous neutrality (neither participant taking the lead) significantly often, which was not a characteristic combination for the Comparison group. And finally, when Head Start mothers displayed low status while their children played high status roles, they were likely to adopt more extreme degrees of low status than Comparison mothers.

The foregoing material identifies some different kinds of status contingencies between mothers' and children's behaviors, pointing out both similarities and differences between the population samples. There are also some important implications in the frequencies of occurrence of the various mother-child contingencies.

Significant mother-child status contingencies were found in a greater number of time-unit intervals in Head Start dyads than in Comparison pairs ($p < .05$). This fact is in line with the conclusions of other investigators that lower class child rearing values are more likely to be based on control and status orientation (see Table 6).

Finally, the relationship between the overall amount of high status displayed by a mother and the amount of high and/or low status displayed by her child was explored. The rank order correlations between mother's high status

and child's high status were not significant for the two groups taken separately, but for the combined samples the correlation was + .43 ($p < .05$); hence it would seem that children of the most controlling mothers also tended to display high amounts of controlling behavior, and that this relationship was independent of social class. However, there was also a positive correlation between the overall amount of high status displayed by a mother and the amount of low status displayed by her child. Correlations in the separate groups were short of the 5% significance level (Head Start + .55, Comparison + .46), but for the combined samples the correlation was + .53 ($p < .01$). Hence the children of the more controlling mothers tended to exhibit more of both high status and low status behaviors, and these relationships were found in the entire sample of mothers and children. The sequential relationships between mothers' high status and their children's high or low status behaviors will be analyzed in the section on sequential patterns.

b) Contingencies between mother's affect and child's affect

Group affect-affect contingencies were very similar in kind for the two groups. Almost all mother-child pairs tended to exhibit positive affect on the part of one participant associated with positive affect on the part of the other, neutrality with neutrality, and negative affect with negative affect.

However, mother-child affect contingencies were found in fewer time-unit intervals in Head Start dyads than in Comparison pairs ($p < .05$). Thus Tables 6 and 7 demonstrate more status-based contingencies in the Head Start pairs and more affection-based patterns in the Comparison pairs. The conclusion that lower class mother-child relationships are more status oriented while upper class interaction is more personally oriented was confirmed in our sample.

There was no relationship between the overall amount of unfriendliness (negative affect) displayed by a mother and the amount of unfriendliness shown by her child (Rank order correlations: Head Start + .03, Com parison + .08; combined groups + .25). There was, however, a relationship between the amount of warmth (positive affect) shown by a mother and the amount shown by her child in both subject groups (Rank order correlations: Head Start + .58, Comparison + .68, combined + .34; the correlation for the combined groups is not significant).

c) Contingencies between mother's status and child's affect

Group patterns were very similar for the two groups of subjects. Mothers tended to display either low status or neutrality when their children were expressing warmth, to display moderately controlling behaviors when their children were expressing neutral affect, and to display strong control when their children were being unfriendly. There was, however, one additional pattern linking mother's strong control with child's affective neutrality which accounted for about 5% of the total interactions in the Comparison pairs but which did not appear at all among the significant patterns for the Head Start group.

d) Contingencies between mother's affect and child's status

Both groups of mothers exhibited negative affect when their children displayed extremes of high status, and neutral affect when their children were only moderately controlling. Mothers' warmth was associated with the child's displaying neutral status in Comparison pairs, but with the child's being in a low status relationship in the Head Start pairs.

e) Similarity between mother's patterns and child's patterns

Since Head Start mothers were less actively engaged in interaction with their children in this experimental situation, we entertained the hypothesis that this held true of their interaction on other occasions and in other situations, and the prediction was made that the patterns of mother and child would be less similar in the disadvantaged group since the child had presumably had less opportunity for modeling. Head Start children did, in fact, display greater number of status-affection contingencies which were not displayed by their mothers than did Comparison children ($p < .02$).

f) Status-Affection-Involvement patterns

All of the preceding analyses have dealt with artificially isolated elements of the complete interpersonal behavior rating but the method was designed to assess the complete simultaneous and sequential patterns exhibited by both participants. This approach is based on the view that the proper subject matter of interaction is what goes on between people, and that the behaviors of each participant contribute to and have an effect on the joint phenomenon in which we are interested.

1) Simultaneous patterns

Although Head Start mothers were only passively involved with their children for larger proportions of the time than Comparison mothers were, there was no difference between the groups in the frequency of time intervals in which both mother and child were exhibiting reduced involvement at the same time. What this means then is that Head Start mothers played the role of silent observer without comment while their children held forth, while Comparison mothers were more likely to enter into the child's activity in one way or another. Thus for Head Start mothers absence of either being leading or soliciting leadership from the child was associated with reduced involvement, while Comparison mothers, while they maintained neutral status and affect, were actively involved.

Differences between the two groups can best be summarized under two categories 1) .those mother-child patterns which were different because the behaviors of Head Start mothers or children were basically different from their Comparison counterparts and 2) those mother-child patterns which were different because similar behaviors occurred in different contexts.

In the first group are patterns based on Head Start mothers' lesser display of active involvement with neutral status and affect; Head Start dyads exhibited significantly less 442-441 ($p < .02$), 442-442 ($p < .002$) and 442-542 ($p < .002$). Instead of these patterns Head Start dyads had more of the patterns based on the mother being a passive participant or

observer in interactions in which the child is taking the lead; SAI patterns 441-552 ($p<.02$) and 441-532 ($p<.05$)were significantly more frequent in Head Start pairs. The final group of patterns which appear to reflect a basic difference between the two populations have the common element of mothers' expression of warmth in a setting of neutral status (MSAI ratings of 452). Head Start mothers had significantly less of these ratings ($p<.05$), and therefore Head Start pairs had less of patterns coded as 452-441 ($p<.02$) or as 452-452 ($p<.02$).

The second group of patterns which were distinctively different for the two groups depend on the contexts in which mothers' mildly controlling-neutral affect (MSA code 54) behaviors occur. Although Comparison mothers had more status 5 ratings altogether, they did not have more of them in combination with any particular affect rating (i.e., they did not have more 53's, 54's, or 55's). However, Head Start pairs have significantly less of the interactions coded 542-441 ($p<.02$) and 542-442 ($p<.05$), which represent a mother's moderate control occurring in conjunction with her child's neutrality. There was no difference, however, in the rate of occurrence of mothers' strong control in the context of child neutrality (ratings codes 742-441 or 742-442), so that the distinction appears to be specific to moderate control. Instead of child neutrality as the context for mothers' moderate control Head Start mothers' status 5 ratings were linked with their child's low status. Nine of the ten Head Start dyads had MSA 54-CSA 34 as significant contingencies, whereas only two Comparison pairs exhibited that pattern. Mothers' moderate control combined with warmth (MSA ratings of 55) followed the same general context trends, with interaction codes 552-441 occurring more often in Comparison subjects (p between .05 and .10) while Head Start pairs had more codes linking MSA 55 with child status ratings of 2 or 3 ($p<.05$). Again, the distinction was specific to mothers' moderate status codes and did not hold true for mothers' high status ratings. Another interesting facet of this same difference is that whereas the Head Start child's low status is contingent on his mother's moderately high status, as just stated, the Comparison child's low status is contingent on his mother's status in only two pairs; thus the middle class child's low status may be construed as being more related to situational circumstances than to his mother.

2) Sequence patterns

Sequence patterns were identified by determining those interaction patterns which occurred in sequence more often than would be expected by chance. (Detailed descriptions of the procedures will be found in Bobbitt, R. A., Gourevitch, V. P., Miller, L. E., and Jensen, G. D., The Dynamics of Social Interactive Behavior: A Computerized Procedure for Analyzing Trends, Patterns, and Sequences. Psychological Bulletin, 1969, 71, 110-121.) For each individual pair of subjects all successors to a given pattern were listed and their proportions were noted. Simultaneous confidence intervals were computed for these proportions, and the unconditional probability of occurrence of each successor pattern (i.e., its overall rate of occurrence for this pair of subjects regardless of predecessor) was compared with the obtained confidence intervals. If the unconditional probability fell below the lower boundary of the confidence interval for the conditional probability, it would be concluded that this successor pattern followed the given predecessor pattern significantly often ($p<.05$).

Sequence analyses necessarily have to be made on individual pairs, and similarities or differences between groups of subjects therefore rest on cumulative tabulations of individual dyads' data. The search for sequential patterns in the twenty mother-child pairs involved in this study has been time-consuming and cumbersome and it would be impractical to tabulate the data in any detailed form. Therefore, one very general conclusion will be stated, and the most interesting or most illustrative examples of the findings will be cited without intention of providing a complete report of all analyses made.

The most important general conclusion is that individual pairs tended to have somewhat individual sequential patterns, so that there was heterogeneity of sequences in both population samples, and the same range of successor patterns was found in both of them. Thus, on the whole, the same kinds of sequence patterns occurred in both groups of subjects though the frequency of some specific predecessors or the rate of occurrence of some specific successors was different. In other words, group differences in behavior sequence appeared to be mainly differences in quantity, not in kind. Furthermore, the data permitted us to identify certain kinds of mother-child interaction sequences which were fairly common to all of the mother-child pairs studied regardless of their social class.

Although Head Start mothers displayed significantly more instances of high status in combination with negative affect than Comparison mothers did, the consequences of this combination when it did occur were much the same in the two groups. For most mothers (7 out of 9 Comparison mothers, 8 out of 10 Head Start mothers) the high status component tended to be continued in the next pattern; only one mother of the entire nineteen displayed continued hostility in the next pattern as a significant consequence. About half of each group of children displayed more than their usual proportions of neutral status in response to their mother's hostile high status. Four of the remaining Head Start children displayed high status behaviors in their next pattern while the remaining Comparison children had no systematic response. This was one of the few instances of different sequences in the two groups of subjects and may turn out to be one of the sources of the simultaneous high status pattern which was characteristically found in Head Start pairs but not in Comparison subjects. Finally, one child displayed hostility in his next response pattern, while the rest exhibited a variety of patterns.

For comparative purposes we examined the consequences of mothers' patterns of high status without hostility, and of hostility without high status. In both instances, continued high status in their next pattern was still characteristic of most mothers (17 out of 20). Interestingly enough, the proportion of children who responded with high status was greater for either component taken singly (8 as a consequence of M's high status, 9 as a consequence of M's hostility) than it was for the hostile-high status combination. Another paradoxical finding was that three children (all Head Start subjects) responded to their mother's strong control with hostility, but only one child ever responded to his mother's hostility with hostility.

The particular question raised next was the extent to which mothers or children reflected in their own next interaction pattern the positive or negative affective expression of the other member of the pair. Seven out of ten mothers in each group displayed warmth in their next pattern after their

child's expression of warmth. Only 10 of the twenty children (4 Comparison, 6 Head Start) reflected their mother's warmth in their next pattern. Thus for all pairs, regardless of social class, mothers reflected their child's friendliness more often than the reverse. There were a great variety of mother status and child status sequence patterns following expression of warmth by the other, so that no group trends were discernible.

Both status and affect patterns on the part of children, following their mother's expression of negative affect, covered a wide range, so that one could not generalize either about cultural differences or about patterns common to most children. What is striking is that when mother's hostility had occurred at the same time that the child's affect rating was neutral, no child systematically responded with hostility.

A mother's response to her child's expression of unfriendliness did seem to be related to social class. Only 3 Comparison mothers responded to their child's unfriendliness with high status behavior, but 9 of the 10 Head Start mothers did so ($p < .02$). A large proportion of Comparison mothers (8 out of 10) had no systematic affective response to their child's unfriendliness (i.e., the various kinds of affective response occurred in no different proportions than they did in their total behavior sample), but an equally high proportion of Head Start mothers did have systematic ways of responding to their child's hostility, though not all Head Start mothers used the same ways. Four of the Head Start mothers responded to their child's unfriendliness with positive affect; no Comparison mother did so. No mother in either group systematically responded to hostility with hostility.

The next area in which successor patterns were examined dealt with interactions in which mothers' high status was linked with children's low status. It has already been pointed out that mothers with the greatest amounts of high status had children who had greater amounts of both high status and low status. An attempt was made to examine the successor patterns of the dyads containing the six mothers who had the greatest amounts of high status (top 1/3) to determine whether the relationships noted were the product of immediate sequences. In three of the six pairs, child low status more often led to mother high status but in the other three pairs, mother high status more often preceded child low status.

Attention was then turned to two groups of patterns involving mothers' more moderately high status. One group included patterns in which mother status 5 was linked with child status 4, which was the characteristic context in the Comparison pairs; the other group included patterns in which mother status 5 was linked with child status 2 or 3, which was the characteristic context for Head Start pairs.

Although mother status 5 was a contingency for child status 3 in nine of the ten Head Start pairs, its successors were somewhat varied for different individuals. For example, for four mothers neutral status occurred in the next interval with greater than chance frequency, while for four others the pattern constituted a contingency for continuing high status. The majority of children had neutral status in the next interval, but for some continued low status occurred as a significant consequence. Only three Comparison pairs had sufficient numbers of MS 5-CS 3 patterns to warrant a search for successor patterns, and each pair had different successors.

The successors to mother status 5-child status 4 were equally varied in the Comparison subjects who had many of these patterns and in the Head Start subjects who had fewer of them. Thus it seems that although certain mother-child interaction patterns differed in their frequency of occurrence in subjects of different socio-cultural level, the orderly ways in which one form of behavior led to another were more varied from one mother-child pair to another.

The final group of patterns which were submitted to sequence analysis were those in which reduced involvement (SAI code 441) occurred for either mother or child. It has already been pointed out that while Head Start mothers had more of these ratings Head Start children had less of them, and that the two groups did not differ in the frequency of both mother and child exhibiting reduced involvement at the same time.

When both mother and child were only passively involved, the child's behavior rating was the first to change in almost all cases (all Head Start pairs, 8 out of 10 Comparison). However, the proportion of successor patterns in which mothers remained passively involved was significantly greater in Head Start subjects ($p < .02$). The most likely change in the child's behavior was for him to earn a high status rating by initiating a new activity. This occurred as a significant consequence in 9 Head Start and 6 Comparison children, and in those instances in which it did occur the proportion of high status patterns was larger in the Head Start children ($p < .05$).

When mothers had been passive participants in interactions in which their children were more actively involved, they were most likely to maintain their reduced involvement while the child continued his activity; while neutral status activity on the part of the child was the general rule, those children who increased their status under these circumstances were all Head Start subjects. When children were the passive participants in interactions in which their mothers were more actively engaged, they were likely to enter into more active participation, but each child accomplished this in his own way.

Review of the principal groups of interaction patterns, with special emphasis on those which were distinctively different in the two population samples either in quantity or in kind, has revealed that the same kinds of sequence patterns are generally found in mother-child pairs regardless of their social class. Different dyads presumably develop different sequence patterns in the course of their interaction experience, some of which are common to most other dyads and some of which appear to differ from pair to pair within a shared common general range of possibilities. One objective of the study was to demonstrate that the approach could delineate characteristic styles of communication in individual subject pairs as well as elaborating group commonalities; it appears that analysis of specific sequence patterns is especially appropriate to the study of individual dyad communication characteristics.

B. Interactive Functions

This analysis dealt with the formal or structural aspects of the communication, designated in terms of interactive function. The first comparison was based on the proportional occurrence in the two groups (using Chi squared comparisons of group totals) of those interactive function categories which

appeared in the entire twenty subjects. However, only those differences are reported here which were also significant when individual frequencies were tabulated and compared by groups, using the Mann-Whitney U test. Thus on both a group and an individual basis Head Start mothers asked more directive questions (questions to which they knew or supplied the answer) and contradicted or corrected their children more. They made less use of agreeing with their children, making suggestions, stating their intended activities, or making factual statements about objects. There was no systematic difference between the two groups of mothers in their asking factual questions, challenging their children's opinions, soliciting the child's judgment or opinion, reporting their own thinking or feeling, supplying factual answers to questions, teaching or explaining, giving orders, or supplying information nonverbally.

So far as the children's interactive functions were concerned, the two groups were similar in almost all respects, with three exceptions: Head Start children supplied less information nonverbally, and made fewer suggestions than Comparison children. They also reported their own feelings, ideas, or opinions more than Comparison children, and they made this kind of response more often than they did anything else.

Other investigators have reported that lower class mothers characteristically give orders while upper class mothers make suggestions. In our study both groups of mothers used more orders (prescribing an activity for their children) than they did suggestions, but Head Start mothers did make less suggestions.

Other investigators have suggested that upper class mothers do more teaching and explaining. We found no difference in the frequency.

Other investigators have suggested that lower class mothers supply less positive feedback and more negative feedback. This was borne out in our data in the higher occurrence of contradictions and corrections, and in the lower occurrence of expressing agreement or acceptance.

It has been suggested that lower class children have learned to ask fewer questions. There was no difference between our groups. It has also been suggested that lower class children use less phantasy. Again, there was no difference.

Finally, it has been suggested that lower class children use more nonverbal communications. Not only was this not true for our subjects, but the Comparison children used significantly more nonverbal communications than the Head Start children did.

This analysis of interactive functions revealed that on the whole mother-child pairs of different socio-cultural levels were much more similar than they were different with respect to what they said or did. It became apparent, however, that some further distinctions could be made when attention was diverted to how it was said or done, by relating the interactive functions to the inter-personal behavior dimensions of status and affect.

Thus while we found no difference in the extent to which the two groups of mothers gave orders. Head Start mothers were rated at higher status levels

when they gave orders (i.e., they were more authoritative) and they gave many more unfriendly orders. Similarly, while there was no difference in the amounts of teaching or explaining displayed by the mothers, Head Start mothers' teaching was accompanied by more extreme degrees of high status.

Not only did Head Start mothers express agreement or acceptance less often, but when they did they were more likely to do so either in a low status deferential manner or with stronger authoritativeness than Comparison mothers.

Head Start children acknowledged or accepted their mothers' activities somewhat less than Comparison children did, but when they did so they were much more likely to be submissive and less likely to do so on a factual basis than Comparison children.

Finally, the fact that Head Start children were less likely to be neutral in either status or affection, and more likely to be assertive and/or submissive and to be friendly and/or unfriendly was reflected in their reporting their ideas or opinions or reciting events.

C. Nonverbal Behavior Codes

In the preceding sections attention has been directed toward the content, context, and relationship implications of the interactions, drawing information from the combined verbal and nonverbal behavior sample. The final analysis focused entirely on the nonverbal physical behaviors of the two participants.

In the laboratory situation which we presented, most subjects spent most of their time seated at the table within arm's reach of each other. No pairs increased the distance between themselves for very large portions of time, but the Head Start subjects did move into the more separate positions more often than, and remained separated for longer periods of time, than Comparison subjects.

A smaller proportion of the behaviors of Head Start mothers was directed toward their children than was true for Comparison mothers, and a larger proportion of Head Start mothers' behaviors was directed toward objects in the environment than was true for the Comparison mothers. Thus Head Start mothers spent more time in the manipulation of objects, glanced at their children less frequently, looked away from their children towards environmental objects more often, and though they started to look at their children more often, they apparently terminated their looks sooner, since the overall length of time spent looking at the child was the same for both groups. The other important difference in physical behaviors was that Head Start mothers smiled less often and also used dramatic hand gestures less often.

Analysis was also made of combinations of behaviors into specific avenues of communication. Interactive behaviors were grouped into three general categories, looking, talking, and gesturing or manipulating, and the occurrence of these singly or in combination was noted. There were no differences between the two groups of mothers in the occurrence of either looking, talking or gesturing by themselves, nor in the occurrence of any two of them together. Head Start mothers did have fewer time-units in which all three kinds of communication were going on simultaneously.

The absence of behavior differences between the two groups of mothers is somewhat dramatic. Many people have viewed lower class communication as being less likely to be verbal and more likely to be nonverbal. The unexpected fact that there were no differences in the amounts of vocalization for either mothers or children fails to support this commonly held view. Furthermore, there were no differences between the two groups of mothers in their use of physical contact, approach, manipulation, or symbolic gestures as their chosen avenues of communication.

Head Start children's behavior differed from the behavior of Comparison children most drastically in terms of their glancing or looking at their mothers less often and spending fewer time intervals in looking. They also leaned closer to their mothers or reached toward them less often than Comparison children did. Finally, they used less hand gestures, but had more facial expressions and grimaces.

The two groups of children differed more than their mothers did with respect to avenues of communication. Although there was no difference in their total amount of vocalization, Head Start children had more time during which talking was the only activity going on (i.e., not looking at the mother or gesturing while they were talking), and fewer time intervals during which they looked at or watched their mothers, either while talking or gesturing, or with looking alone. Finally, Head Start children made physical approaches to their mothers less often, though the amount of actual physical contact was no different for the two groups.

CONCLUSIONS

The foregoing analysis of similarities and differences between the two groups of subjects has been extremely detailed in the effort to present as complete a picture as possible of the findings of this two year project. Interaction has been analysed in terms of the generalized qualities of the on-going social transactions and the dynamic succession of patterns involved (interpersonal behaviour ratings), in terms of the format of those transactions (interactive functions), and in terms of the modes or avenues of communication (nonverbal behavior codes). An attempt will now be made to abstract the most important findings and integrate them into a meaningful summary.

The crux of the difference between the two population samples appears to lie in the lower class mothers' less active participation in joint activities, and their consequently spending a greater amount of time in passively attending to and being audience to the child's pursuits. While their children were engaged they were likely to watch, listen and answer questions, but they were less likely to initiate conversation, offer comments, or reflect interest; in other words, they were rarely "just sociable". When they were engaged in passive observation their attention fluctuated to other aspects of the environment and we found a larger proportion of their behavior directed toward objects than was true for the middle class Comparison mothers. At times they played with the toys separately, as equals or even competitors. An extreme example was one mother who "sulked" for five minutes because her son wanted to play with the same toy she wanted to play with. Mutual silences were usually broken by the child. Mothers offered supportive acknowledgment or reassuring agreement less often, and were less likely to make suggestions or offer ideas or information unless the child solicited their intervention. These trends are reflected in the comparative lack of mothers' being actively involved while maintaining neutral status, or of combining neutral status with warmth, both of which were more frequent in the Comparison mothers. They are reflected also in the Head Start mothers' exerting moderate status mainly when the child was playing a reciprocal low status role. It is not meant to imply that lower class mothers were more reserved or were reluctant to enter in. They expressed pleasure and warmth when their child's low status needs presented the occasion for their control or expertise.

The picture which begins to emerge is that our Head Start mothers employed less of those forms of moderate control techniques that might be thought of as providing subtle positive approval, support, or social reinforcement of the child's ongoing activity. They stated their agreement less. They smiled less. Certainly our demonstration that Head Start pairs had fewer affection-based interaction contingencies and more status-based contingencies is relevant here. As Kohn (1964) pointed out, lower class parents do not feel the same obligation to be supportive of their children that middle class parents feel; instead they see the child's behaving properly as their responsibility. This was reflected in our subjects by their increased involvement via behaviors which serve to restrain, interrupt, complete, or otherwise alter the child's activity (as opposed to the approval or support of what the child was doing offered by the middle class mothers). They entered into active participation by means of directive questions, anticipating a specific response. They corrected or contradicted their children more. They were most likely to

become actively involved when they felt that what the child was doing was improper, inadequate or inappropriate, so that they had to tell him what to do or what not to do, or what he had done wrong. Thus, many of their involvements were likely to take the form of interventions, and to be highly authoritative in quality. At the same time these communications were necessarily non-accepting and disapproving, and this is probably one important source of the mother high status-unfriendly ratings which characterized our subjects.

What of the children? Obviously, the kinds of patterns we have been talking about are reciprocal and children play their own roles in them. The interaction qualities displayed by the two groups of children were more different than were those of their mothers. Head Start children were less neutral and both took and solicited leadership more than Comparison children. In the light of their mothers' passivity it is not surprising that at times they carried on their activities independently and at times initiated interchange by a variety of means; however, it is of some interest (and hopeful) that they did not succumb to mutual passivity, but instead were more actively involved than the Comparison children. They took the lead in ongoing activities by keeping up a running commentary on their own ideas, feelings, or opinions. They did not appear to expect or look for support or encouragement from their mothers. They talked, as to an audience, but neither looked at their mothers nor gestured as they talked and made fewer physical approaches. This constellation of behaviors offers a logical basis for the greater dissimilarity found between mother and child patterns in our Head Start group, and helps to explain the smaller number of affect-based contingencies between them.

When their mothers intervened, which was often in the form of authoritative non-acceptance, the children were likely to resist or object; when the children became dictatorial their mothers were likely to do the same. High status and control were more likely to have negative connotations, and they experienced little practice in receiving friendly support and non-interfering help. Thus we note that Head Start children expressed more hostility than Comparison children.

This summary has emphasized differences between the two cultural samples, but it must be noted that the contrasts were purposely overdrawn and that they refer to relative quantities rather than black-or-white, all-or-none qualities. The study has also highlighted some important similarities. Similarities which warrant special mention here are either those which document some facets of mother-child interaction which were common to both groups and apparently unaffected by cultural level, or those which fail to uphold certain popular beliefs about cultural differences.

One important generalization is that although there were differences in the frequencies with which certain patterns occurred, and/or in the contexts in which they were displayed, the same consequences generally followed in both population samples when these patterns did occur. Furthermore, sequential patterns appeared to be characteristic of particular dyads or groups of pairs rather than of one social class or the other.

Mother-child contingencies tended to be more alike than different in the two groups, differing in amount more than kind, with the exceptions noted above. One interesting observation was that mothers with the largest total amounts of high status behavior tended to have children with the largest total amounts of high status behaviors, but that their children also tended to have

the highest amounts of low status behavior. Mothers who displayed the largest amounts of positive affect tended to have children who displayed larger amounts of positive affect, but there was no correlation between the overall amounts of negative affect displayed by a mother and her child.

With respect to immediate sequential patterns mothers reflected friendliness or warmth expressed by their children more often than children reflected their mothers' warmth. No child systematically responded to his mother's hostility with hostility, nor did any mother systematically respond to her child's hostility in kind. However, Head Start mothers had more patterns ways of dealing with their children's hostility than Comparison mothers did.

Certain aspects of the analysis of format or modes of communication failed to yield anticipated differences in our samples. There was no difference in the amounts of verbal interaction on the part of either mothers or children, and contrary to expectations, middle class children employed more rather than less nonverbal communication. Head Start mothers did not give more orders nor teach or explain less; but they did do so with different status and/or affection qualities. Head Start children did not ask fewer questions nor indulge in less phantasy play. The absence of anticipated findings in these areas can only be noted with interest. The small size of the sample, the racial make-up of the disadvantaged group, the restriction of data collection to two laboratory sessions might all have contributed to our divergent results.

RECOMMENDATIONS

On the whole the findings of the present empirical research are in essential agreement with and provide documentation of those reported by other investigators. However, they lend themselves to an interpretation which has slightly different emphasis and implications. In the past most investigators have stressed the differences in cognitive function between school-age children of different cultural backgrounds, relating these differences to the type of learning experience to which the children have been exposed. More recent research has shifted its focus of interest toward a much earlier period in the child's life, recognizing that the amount and kind of interaction which the child experiences before the age of three set the stage for maximizing or hindering his optimal intellectual and social growth. A recent popular report of the efforts of th Harvard School of Education's Pre-School Project presents a rather complete picture of some of the current approaches (Pines, 1969).

The present research has focused on the about-to-enter-school 4 or 5 year old. It was designed to test the efficacy of new techniques of recording and analysing representative interactions between the child and his mother, on the premise that a clearer understanding of the interpersonal elements of communication was relevant to the child's success in his first experiences with teachers and educational situations other than his mother and home. Special effort was made to explore not only what was said or done, but how it was said or done, and the findings have confirmed the expectations that there were important cultural differences in communicative qualities.

The cumulative evidence of this study revealed that the lower class mother was more of a passive bystander than an active supporter of her 4- or 5-year-old's activities. She did little to reinforce his successful efforts but played a more authoritative role by intervening when she perceived his activity as being improper or inadequate. The child was revealed as expecting and seeking less contact, approval, or helpful participation from the mother except when he specifically solicited it. There was evidence that the lower class child might have had less opportunity or motivation to model his behaviors on his mother's example, and to be less sytematically responsive to her affectional tone. This picture has some interesting implications for understanding the success and effectiveness of educational programs for the young disadvantaged child. It suggests that his school experiences need not only to enrich his familiarity with objective things but need to broaden his practi e in personal relationships. It is possible that providing the opportunity for more intensive interaction with adult figures, the chance to respond and to be responded to in person-oriented terms, and having a more consistent model to imitate might serve to supplement his repertoire of communication techniques and help it to take on more systematic patterning. If this were so it might help to explain our observation that our two groups of children were more unlike each other in some respects than their mothers were. One might hypothesize that later socialization experiences can serve to some extent to reduce interpersonal differences which are present when lower class children first move from family relationships into broader, more varied, and qualitatively different social interactions.

However, in the brief time between the initiation and completion of this study it has become increasingly apparent that if such clear cut differences exist at the age of school entry, the most effective tactics must involve preventive intervention at a far earlier age rather than remedial efforts after differential patterns have become established.

It is likely, from the evidence existing now, that the crucial patterns of mother-child interaction develop and become well established between the ages of one and two. It seems, therefore, that future research must focus on two areas. One line of attack requires a study similar to the one just completed to verify our hypothesis that lower class mothers' tendency to give less emotional support, reinforcement, and interest or participation in the child's successful ongoing activities, and to actively participate with him only if they perceive intervention to be necessary, holds true at the earlier ages. The second necessary focus for further research is to explore means of modifying the mothers' behaviors so that their patterns of interaction with their children provide more appropriate amounts of reinforcement, support and approval. The recording and analysis techniques developed in the research just completed provide precise definitions of the existing mother-child contingency patterns in any given subject pair. They can thus both indicate which specific patterns can appropriately be reinforced or modified and provide a baseline profile for evaluating the success of behavior modification techniques both in directly effecting changes in a mothers behavior repertoire, and in indirectly changing the child's patterns. A further elaboration of this line of attack would study the extent to which the child's interaction patterns are subject to direct alteration by his experiencing intensive interaction with an adult other than his mother.

While the ultimate goal is prevention of scholastic disadvantage before it occurs, this is not going to be achieved in any large scale way in the near future, and for some years numbers of culturally disadvantaged children will continue to approach their first educational experience with interpersonal communication styles which equip them poorly for social and cognitive growth. Thus while early preventive intervention is much to be preferred, remedial intervention at the age when disadvantage is recognized can become a practical necessity. The general scheme outlined above for specifically altering mother-child patterns by applying behavior modification techniques, either to the mother's portion or the child's portion of their joint interaction may be a tedious but necessary stop-gap contribution to increasing the disadvantaged child's chances of successful educational experiences.

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APPENDIX A

BEHAVIOR CODES

Code	Definition
	I. Relative Position
1.	Close proximity Any parts of body touching other than one subject's hand or forearm on some part of body or hand of other; scored also for being in such close proximity that it is hard to tell whether or not they are touching, or that they keep touching and separating slightly as they play.
2.	Near Within arm's reach of each other, including occasional brief touching (less than 4 seconds), or more sustained hand-hand (or forearm-forearm) contact.
3.	Separated At a distance greater than arm's length.
	II. Actor
M	Mother
C	Child
	III. Behavioral Dimensions
P	Posture
W	Locomotion
L	Looking
H	Manipulation
G	Gesture
V	Vocalization (not coded in original recording; inserted at time of transcription, from vocalization channel of tape).
	IV. Behavioral Subcategories
*PA	Sitting (chair understood). Follow by word if sitting elsewhere than chair, as - CPA Floor. Coded as A alone (P understood) because of frequency with which code occurs.

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*All behaviors marked with an asterisk are "duration behaviors," i.e., they are understood to continue until their ending is recorded by the code 10. Thus CA 10 indicates ending of child's sitting posture. All non-starred behaviors are understood to be momentary, i.e., referring only to the time interval during which they were recorded.

*PS	Standing upright (floor understood). Coded as S alone (P understood).
*PK	Kneeling, crouching
*PL	Lying down
PQ	Shift of weight or position, if this shift is not an implicit part of another coded movement such as leaning toward or turning away from.
WA	Walk. Coded as W alone (A understood). Upright position inferred. If locomotion occurs in any other posture than standing use appropriate postural code to so indicate, as WK for crawl.
*WL	Lean toward or away from
*LA	Look at - watching any parts of other person
*LAZ	Stare at intently - used only with reference to other subject; most usual form is gazing intently at other's face. (Looking at some definite environmental object other than that being handled by one or the other subject is coded as LAO, as for subject looking at mirror, window, etc. Looking at toys on table or vaguely into space is not coded).
LT	Turn away from other subject
*HA	Feel, touch, pat, lay hand on. Also used with appropriate word to signify touching with another part of the body, as HA cheek M's arm.
HR	Reposition, or restrain
HG	Groom (scratch, straighten hair, adjust clothing, etc.)
*HC	Cradle, hold, put arm around
HY	Reach toward, extend an object toward, follow with hand
*HP	Rest head (cheek, chin, etc.) on hand with propped elbow
*HU	Use. Appropriate manipulation of object without detailing motor acts (MHU Book, CHU Puzzle).
GA	Generalized hand or body gestures
GAZ	Special instance - burst of high level activity most often including PQ, GS, GG, GDram, GA - too complex and too fast to be broken down.

Example

Code	Explanation
3, MS, CS, CHAO, MHUO	Child and mother standing apart from each other; child touches drapes; mother pulls drape cord.
MHUO 10, MLAC, MWAC, 2, CLTM	Mother looks at child, walks closer to him; child turns away.
CHAO 10, CWAMX, 3, MA	Child removes hand from drapes, walks away from mother; mother sits in chair.
CLAM and 10, MS, MWAC, 2	Child glances at mother, mother stands and walks toward child.
MHRC's hand, MLAC 10, MGshow CHUO, MGNod, CGS, CHUO 10	Mother guides his hand, then shows him cord, child pulls cord, mother nods, child smiles.

APPENDIX B

INTERACTIVE FUNCTIONS

1. Directive question in which expected answer is explicitly or implicity contained (That's pretty, isn't it? Don't you want to...?); also, "rhetorical" question which doesn't expect an answer (Okay? or Hm? attached to end of statement).
2. Information-asking question.
3. Questioning or challenging other's ongoing activity.
4. Asking for help, guidance, or participation.
5. Asking permission.
6. Asking for opinion, approval, desires, thoughts, etc.
7. Giving praise (That's good. N.B. - That's right is often just agreeing, see #27).
8. Criticism of other person's behavior or activity.
9. Reporting facts.
10. Reporting intentions.
11. Reporting opinion, ideas, feelings.
12. Direct interpretation of other's behavior (You're tired).
13. Reporting fantasy or dramatic play.
14. Echo, temporizing.
15. Echo, as student to other's teaching.
16. Informing, teaching, explaining.
17. Giving supportive, reassuring, pacifying information (We'll be through soon).
18. Giving brief factual information in response to question.
19. Ordering, instructing how to do something, or what to do.
20. Telling other to make decision (ambiguous status).
21. Coaxing other to do something (Let's see if you can...).
22. Demand from other (I want to sit in your lap).
23. Disagree, contradict, correct, refuse suggestion or request.

24. Disagree giving outside authority.

25. Make suggestion re other's activity or joint activity which includes other.

26. Present alternatives for choice.

27. Agree, accept suggestion.

28. Give permission when requested.

29. Give permission for what other person has already designated as intention or activity.

30. Expressive statement or sounds (Whoops, ouch, oh my gosh, laugh).

31. Fragment - incomplete statement.

32. Unintelligible.

33. Playful use of sounds, chanting, sound-effects, singing.

34. Social formality (hi, Thank you).

35. Soliciting attention (Hey, mom).

50. No verbalization.

51. No interaction, even passive.

APPENDIX C

Single Dimension Frequencies

Table I:Status Ratings

Mothers			Children	
Head Start	Comparison		Head Start	Comparison
		Ambiguous (0)		
0	1		1	0
2	1		2	1
2	1		2	1
2	2		6	3
3	2		11	5
4	2		13	5
5	4		14	5
5	5		14	7
8	5		18	7
14	12		22	9
U = 39			U = 30	
		Low Status (2,3)		
25	12		48	41
36	24		83	44
40	33		91	49
50	36		108	55
50	64		115	63
61	64		124	76
63	64		157	91
65	75		171	112
76	75		176	145
83	152		215	263
U = 49.5			U = 26.5 p<.10	
		Neutral Status (4)		
575	572		525	528
645	619		587	734
706	621		621	808
710	633		654	813
791	722		680	833
809	734		716	847
811	778		733	873
818	865		767	935
902	873		843	936
1065	879		943	1053
U = 39			U = 22 p<.05	

Mothers		Children	
Head Start	Comparison	Head Start	Comparison
Moderately High Status (5)			
118	267	182	146
209	283	218	218
253	293	285	224
271	348	286	231
315	381	343	254
325	413	361	268
346	442	392	270
366	446	398	301
376	558	431	326
U = 23 p < .05		U = 29.5	
High Status (6,7)			
48	54	42	17
62	59	65	22
71	63	66	40
91	63	70	42
91	64	80	44
98	73	80	48
108	77	88	53
145	78	105	87
243	101	117	89
250	119	144	117
U = 30		U = 25 p < .10	

Table 2: Affection Ratings

Mothers		Children	
Head Start	Comparison	Head Start	Comparison
	Ambiguous (0)		
0	0	0	0
1	0	3	0
2	1	3	2
2	2	5	2
6	4	6	3
6	4	6	3
6	9	7	4
10	10	9	4
10	10	16	5
10	21	18	10
U = 47.5		**U = 24.5 p between .05 & .10**	
	Negative Affection (1,2,3)		
9	1	19	5
12	4	29	8
15	9	42	11
20	11	46	14
25	14	51	18
38	14	67	24
42	15	77	30
45	15	112	33
63	60	113	38
83	101	122	59
U = 28.5		**U = 12 p < .02**	
	Neutral Affection (4)		
837	729	729	815
895	839	797	934
903	880	855	1014
937	888	873	1016
940	929	906	1058
942	942	944	1082
946	955	967	1091
1041	967	978	1123
1049	1002	1008	1128
1201	1073	1119	1152
U = 41.5		**U = 18 p < .02**	

Mothers		Children	
Head Start	Comparison	Head Start	Comparison
Moderately Warm Affection (5)			
39	115	114	89
148	171	192	100
200	235	221	125
255	298	229	147
264	300	258	154
279	305	261	192
290	349	286	203
293	357	287	213
295	399	403	305
391	523	414	371
U = 29		U = 24.5 p<.10	
Strong Positive Affection (6,7)			
0	0	0	0
0	0	0	0
0	1	0	0
1	1	0	0
1	2	0	0
1	4	0	1
7	4	1	3
8	6	1	3
10	8	5	3
15	12	10	4
U = 47.5		U = 46	

Table 3: Involvement Ratings

Mothers		Children	
Head Start	Comparison	Head Start	Comparison
Low Involvement (0)			
0	0	9	8
1	0	10	27
4	0	21	38
14	4	33	44
19	6	42	47
29	8	101	49
59	14	102	55
67	17	233	67
132	28	234	86
336	66	374	132
U = 30.5		U = 44	
Passive Involvement (1)			
389	294	237	229
447	320	238	361
468	328	247	389
481	346	280	419
509	357	306	469
585	480	306	515
606	507	334	516
638	523	353	525
668	573	363	531
805	589	552	578
U = 23 p<.05		U = 19 p<.02	
Active Involvement (2,3)			
323	621	475	581
443	663	639	643
578	733	663	678
603	736	805	695
650	774	853	708
674	889	859	736
722	912	885	797
754	914	921	852
792	932	1012	863
804	966	1014	993
U = 19 p<.02		U = 36	

Table 4: Mother Status-Affection Combinations

Mother Status 5 in combination with:

Affect 5		Affect 4		Affect 2 or 3	
Head Start	Comparison	Head Start	Comparison	Head Start	Comparison
13	55	96	100	0	0
74	99	102	133	5	2
110	103	120	136	5	2
135	133	125	176	9	3
137	134	141	196	9	7
154	166	144	204	13	7
155	186	157	230	16	8
166	196	160	248	24	10
179	237	172	301	26	27
210	308	211	365	31	78
U = 43.5		U = 24 p<.10		U = 36.5	

Mother Status 6 and 7 in combination with:

Affect 5 and 6		Affect 4		Affect 2 or 3	
Head Start	Comparison	Head Start	Comparison	Head Start	Comparison
2	6	22	13	7	0
26	8	31	21	7	1
26	10	39	30	8	3
29	15	42	31	8	4
35	18	42	36	13	7
36	31	50	36	14	7
39	34	51	50	17	8
52	34	85	51	29	11
54	43	125	63	31	19
75	60	136	75	68	21
U = 33		U = 33.5		U = 23 p<.05	

Table 5: Child Status-Affection Combinations

Child Affect 2 or 3 in combination with:

Status 6 or 7		Status 5		Status 4	
Head Start	Comparison	Head Start	Comparison	Head Start	Comparison
8	3	9	2	0	0
17	3	10	4	0	0
17	3	11	6	0	0
22	3	12	7	0	1
27	4	17	12	0	1
31	6	24	12	1	1
43	7	33	13	3	1
51	9	39	13	4	1
56	11	41	17	4	3
61	39	48	25	7	3
U = 8		U = 26		U = 48	
p < .002		p < .10			

Status 2 or 3

Head Start	Comparison
0	0
0	0
1	0
3	0
3	0
4	1
4	3
4	3
6	3
8	4

U = 23.5
p < .10

Table 6: MS-CS Contingencies

Head Start	Comparison
302	17
354	53
404	235
512	246
593	444
598	478
627	510
678	523
700	579
773	580

U = 21
$p < .05$

Table 7: MA-CA Contingencies

Head Start	Comparison
0	2
1	695
1	807
4	830
4	897
119	918
758	922
794	923
884	964
989	979

U = 21
$p < .05$